

REMARKS

In response to the Office Action dated October 23, 2001, claims 2 and 4-8 are amended, claims 1 and 3 are canceled and new claim 10 is added. No new matter is presented.

The Office Actions states that a new oath or declaration is required because the inventor's citizenship is not properly identified. A new declaration/oath is submitted herewith.

Claim 1-9 have been rejected in the Office Action under 35 USC 112, second paragraph. The claims have been amended for improved clarity.

Claims 1-8 have been rejected in the Office Action under 35 USC 103(a) as unpatentable over German Reference No. 44 06 720 (the '720 reference) in view of Kobayashi (U.S. Patent No. 5,777,451). The rejection of claims 1 and 3 are moot in view of their cancellation. The rejection is respectfully traversed.

The Examiner cites the '720 reference as disclosing "a train control system including a method of operation similar to that recited in the claims, except that the vehicle[s] are not arranged to be virtually coupled as defined in the claims." However, the Examiner notes that Kobayashi discloses "a vehicle control system including a method of virtually coupling vehicles 30, 31 into vehicle groups for enhancing the communication between a central control and the vehicle groups; wherein, the spacing between vehicles 30, 31 in the vehicle groups is controlled by vehicle base distance monitoring systems, and the vehicles in the groups are independent from each other.

The present invention seeks to reduce the data traffic between trains traveling along a route and devices along the route for protecting railway operations. To accomplish this task, successive trains are virtually coupled such that devices placed along the route exchange data with one of the coupled trains. Individual trains monitor their own integrity and transmit messages, as necessary, to the train communicating with the devices along the route. Hence, the

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devices along the route communicate with a single (i.e. virtually coupled) train, although each train in the virtually coupled train monitors and maintains its own integrity.

Neither the '720 reference nor Kobayashi, either alone or in combination, teach a reduction of data traffic between virtually coupled vehicles along a route and devices along the route, where each of the vehicles on the virtually coupled train is responsible for monitoring train integrity and transmitting messages to a vehicle selected for communicating with the devices along the route, as required by new claim 10 (incorporating the limitations of claims 1 and 3, now canceled). The '720 reference merely discloses a train control system, as described by the Examiner. Kobayashi, while describing a train system having virtually coupled vehicles, fails to disclose each of the vehicles communicating with a single vehicle, the single vehicle communicating with the devices along the route. Rather, each of the vehicles in Kobayashi includes a vehicle-mounted receiver 43 and a vehicle-mounted transmitter 52. Each of the vehicles communicate with one another (not with only a single vehicle) to collect target and present position information to determine "cell" positions of each vehicle to determine the position of each of the vehicles when the platoon leader 30 moves. This information is then used to determine the relative distance between vehicles as the virtually coupled trains move. There is no teaching or disclosure of vehicles in the virtually coupled train communicating with a single vehicle, where the single vehicle then communicates with devices located along the track. (See, for example, col. 4, line 35- col. 6, line 65).

Since the recited structure is not disclosed by the applied prior art, claim 10 is patentable.

Claims 2-9, depending directly or indirectly from claim 10, are similarly patentable. In view of the foregoing, claims 2-10 are in condition for allowance. An indication of the same is solicited.

The above amendments to the specification, claims, and abstract have been made to place the application in proper U.S. format and to conform with proper grammatical and idiomatic

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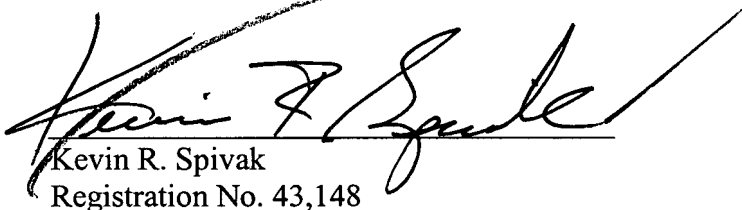
English. None of the amendments herein are made for reasons related to patentability. No new matter has been added.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made**".

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 449122001400. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

For the convenience of the Examiner, the changes made are shown below with deleted text in strikethrough and added text in underline.

In the Claims:

Please cancel claim 1.

2. (Twice Amended) The method according to claim 10, wherein ~~more than~~ at least two successive vehicles ~~can be~~ are coupled to form ~~a virtual composite vehicle train~~ the virtually coupled vehicles.

Please cancel claim 3.

4. (Twice Amended) The method according to claim 10, ~~wherein for the braking distance, in addition to the relative braking distance of the successive vehicles or the absolute braking distance of the vehicles behind,~~ further comprising monitoring safety supplements ~~are taken into account during~~ at least for the a confidence interval of the locating individual vehicles, ~~process, as well as data-transmission and data-acknowledgement times.~~

5. (Twice Amended) The method according to claim 10, wherein the virtual coupling of the vehicles is canceled and the devices along the route communicate with ~~the~~ individual vehicles.

6. (Twice Amended) The method according to claim 5, wherein the vehicles communicating with the devices along the route inform the devices about ~~the~~ which vehicles ~~which are coupled to them virtually one another, and in response to the detection of the cancellation of the virtual coupling,~~ the devices along the route ~~again~~ request at least separate location messages from the vehicles behind one another for the route sections along ~~which they travel~~ being traveled in response to cancellation of the virtual coupling.

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7. (Twice Amended) The method according to claim 5, wherein after ~~the~~ cancellation of the virtual coupling, the vehicles ~~previously coupled virtually~~ report to the devices along the route and output at least separate location messages for the route sections ~~along which they travel~~ being traveled.

8. (Twice Amended) The method according to claim 10, wherein the virtual coupling of the vehicles is performed or canceled by the vehicles.

Please add the following new claim.

10. (New) A method for reducing data traffic between track-bound vehicles traveling along a route and devices along the route, comprising:

registering a vehicle request to be allowed to travel along the route;

assigning permission to the vehicles to travel along the route according to predefined rules, where each of the vehicles determine a respective location on the route; and

monitoring train integrity within each of the vehicles and transmitting messages to one of the vehicles selected to communicate with the devices along the route,

wherein the vehicles traveling on the route are moved within braking distance of one another such that the vehicles are virtually coupled,

the virtually coupled vehicles move together under independent operation using a vehicle-mounted distance-maintaining system, and

the devices along the route communicate with the virtually coupled vehicles, such that a front of the virtually coupled vehicles is determined by a front most vehicle and a rear of the virtually coupled vehicles is determined by a rear most vehicle.